Physics

Section Id :	418099369
Section Number :	2
Mandatory or Optional :	Mandatory
Number of Questions :	25
Section Marks :	25
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Is Section Default? :	null

Question Number : 51 Question Id : 41809918453 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The dimension of the ratio of angular momentum and linear momentum is

Options :

1. ✖ L^0

2. ✔ L^1

3. ✖ L^2

$$L^{-1}$$
4. ✖

Question Number : 52 Question Id : 41809918454 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

One Fermi is equivalent to

Options :

10^{-12} meter
1. ✖

10^{12} meter
2. ✖

10^{-15} meter
3. ✔

10^{15} meter
4. ✖

Question Number : 53 Question Id : 41809918455 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A cat is situated at point A (0,3,4) and a rat is situated at point B (5,3,-8).

The cat is free to move but the rat is always at rest. Find the minimum

distance travelled by cat to catch the rat

Options :

5 units

1. ✖

        12 units

2. ✖

        13 units

3. ✔

        17 units

4. ✖

Question Number : 54 Question Id : 41809918456 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Find the values of x and y for which vectors $\vec{A} = (6\hat{i} + x\hat{j} - 2\hat{k})$ and

$\vec{B} = (5\hat{i} - 6\hat{j} - y\hat{k})$ may be parallel

Options :

        $x=0, y=\dfrac{2}{3}$

1. ✖

        $x=-\dfrac{36}{5}, y=\dfrac{5}{3}$

2. ✔

        $x=-\dfrac{15}{3}, y=\dfrac{23}{5}$

3. ✖

$$x = \frac{36}{5}, y = \frac{15}{4}$$

4. ✖

Question Number : 55 Question Id : 41809918457 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The velocity of a body moving along a straight line with uniform deceleration 'a' reduces by ¾ of its initial velocity. The total time of motion of the body is

Options :

1. ✔ $\frac{3u}{4a}$

2. ✖ $\frac{4a}{3u}$

3. ✖ $3u \times 4a$

4. ✖ zero

Question Number : 56 Question Id : 41809918458 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A stone thrown vertically upwards with a speed of 'u' m/s attains a height 'h₁'. Another stone thrown vertically upwards from the same point with a speed of $\frac{u}{3}$ m/s attains a height 'h₂'. Choose the correct relation

Options :

1. ✔ $h_2 = \frac{h_1}{9}$

2. ✖ $h_2 = \frac{h_1}{19}$

3. ✖ $h_2 = \frac{h_1}{3}$

4. ✖ $h_2 = 3h_1$

Question Number : 57 Question Id : 41809918459 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The horizontal range of a projectile is $4\sqrt{3}$ times of its maximum height. Its angle of projection will be

Options :

1. ✔ 30^0

2. ✖ 60^0

3. ✖ 90^0

4. ✖ 45^0

Question Number : 58 Question Id : 41809918460 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The range of a projectile fired at an angle of 15° is 30m. If it is fired with

the same speed at an angle of 45°, its range will be

Options :

1. ✖ 50m

2. ✖ 30m

3. ✔ 60m

4. ✖ 100m

Question Number : 59 Question Id : 41809918461 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

When a body slides down an inclined plane with coefficient of friction as μ, then its acceleration is given by

Options :

1. ✖ $g(\mu \sin \theta + \cos \theta)$

2. ✖ $g(\mu \sin \theta - \cos \theta)$

3. ✖ $g(\sin \theta + \mu \cos \theta)$

4. ✔ $g(\sin \theta - \mu \cos \theta)$

Question Number : 60 Question Id : 41809918462 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A body is in equilibrium on a rough inclined plane under its own weight. If the angle of inclination of the inclined plane is 'α' and the angle of friction is 'λ',then

Options :

1. ✖ $\alpha > \lambda$

2. ✖ $\alpha > \lambda/2$

3. ✔ $\alpha = \lambda$

4. ✖ $\alpha \geq \lambda$

Question Number : 61 Question Id : 41809918463 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A ball of mass 1 kg collides with a wall with speed 8 ms^{-1} and rebounds on the same line with the same speed. If mass of the wall is taken as infinite, the work done by the ball on the wall is

Options :

1. ✖ 6 J

2. ✖ 8 J

3. ✖ 9 J

4. ✔ zero

Question Number : 62 Question Id : 41809918464 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A pump motor is used to deliver water at a certain rate from a given pipe.

To obtain thrice as much water from the same pipe in the same time, power

of the motor has to be increased

Options :

1. ✖
   3 times

2. ✖
   9 times

3. ✔
   27 times

4. ✖
   81 times

Question Number : 63 Question Id : 41809918465 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The energy required to accelerate a car from rest to 10 ms^{-1} is E. What

energy will be required to accelerate the car from 10 ms^{-1} to 20 ms^{-1}?

Options :

1. ✖
   E

2. ✔ 3E

3. ✘ 5E

4. ✘ 7E

Question Number : 64 Question Id : 41809918466 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The time period of a simple pendulum of infinite length is (R_e = radius of earth)

Options :

1. ✔ $T = 2\pi \sqrt{\dfrac{R_e}{g}}$

2. ✘ $T = 2\pi \sqrt{\dfrac{2R_e}{g}}$

3. ✘ $T = 2\pi \sqrt{\dfrac{R_e}{2g}}$

4. ✘ $T = \infty$

Question Number : 65 Question Id : 41809918467 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A particle executes SHM of amplitude 5 cm and period 3 s. The velocity of

the particle at a distance 4 cm from the mean position (take $\pi = 3$) is

Options :

1. ✖ 8 cm s^{-1}

2. ✖ 12 cm s^{-1}

3. ✖ 4 cm s^{-1}

4. ✔ 6 cm s^{-1}

Question Number : 66 Question Id : 41809918468 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A particle is executing SHM with amplitude α and has maximum velocity

'v'. Its speed at displacement $\alpha/2$ will be

Options :

1. ✔ $0.866 \, v$

v/2

2. ✖

v

3. ✖

v/4

4. ✖

Question Number : 67 Question Id : 41809918469 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A whistle of frequency 1000 Hz is sounded on a car travelling towards a cliff with velocity of 18 m s^{-1} normal to the cliff. If velocity of sound = 330 m s^{-1}, then the apparent frequency of the echo as heard by the car driver is nearly

Options :

1. ✔ 1115 Hz

2. ✖ 115 Hz

3. ✖ 67 Hz

4. ✖ 47.2 Hz

Question Number : 68 Question Id : 41809918470 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

An open window is a perfect

Options :

Reflector of sound

1. ✖

Absorber of sound

2. ✔

Scatterer

3. ✖

Refractor

4. ✖

Question Number : 69 Question Id : 41809918471 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A gas is found to obey P^2V = constant. The initial temperature and volume are T_0 & V_0. If the gas expands to volume $2V_0$, then the final temperature is

Options :

$\sqrt{2}\, T_0$

1. ✔

$2T_0$

2. ✖

$\dfrac{T_0}{2}$

3. ✖

$\dfrac{T_0}{\sqrt{2}}$

4. ✖

Question Number : 70 Question Id : 41809918472 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The constant in ideal gas equation is known as

Options :

Universal gas constant

1. ✔

Pressure constant

2. ✖

Temperature constant

3. ✖

Boltzmann constant

4. ✖

Question Number : 71 Question Id : 41809918473 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The ratio of specific heats for a mono atomic gas is given by

Options :

1. ✖ $\dfrac{7}{5}$

2. ✖ $\dfrac{5}{2}$

3. ✔ $\dfrac{5}{3}$

4. ✖ $\dfrac{9}{5}$

Question Number : 72 Question Id : 41809918474 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Two identical samples of a gas are allowed to expand (i) isothermally (ii) adiabatically. Work done is

Options :

1. ✖ More in the adiabatic process

More in the isothermal process

2. ✔

Equal in both processes

3. ✘

No Work done in any process

4. ✘

Question Number : 73 Question Id : 41809918475 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The heat required to raise 0.5 Kg of sand from 30°C to 90 °C is given by

(Specific Heat of sand = 830 J/Kg °C)

Options :

23450J

1. ✘

54560J

2. ✘

4578J

3. ✘

24900J

4. ✔

Question Number : 74 Question Id : 41809918476 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A ray of light will undergo total internal reflection if it

Options :

1. ✔ Travels from denser medium to rarer medium & angle of incidence should be greater than critical angle

2. ✖ Travels from rarer medium to denser medium & angle of incidence should be greater than critical angle

3. ✖ Travels from denser medium to rarer medium & angle of incidence should be less than critical angle

4. ✖ Travels from rarer medium to denser medium& angle of incidence should be less than critical angle

Question Number : 75 Question Id : 41809918477 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The expulsion of a magnetic field from the interior of a superconductor , a phenomenon is known as

Options :

1. ✖ Isotopic effect

2. ✖ BCS theory

3. ✔ Meissner effect

4. ✖ London theory

Chemistry

Section Id :	418099370
Section Number :	3
Mandatory or Optional :	Mandatory
Number of Questions :	25
Section Marks :	25
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Is Section Default? :	null

Question Number : 76 Question Id : 41809918478 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0